

CLAIMS

1. A method of transmitting packet-switched data between a transmitter and a receiver in a radio system, in which method the connection between the transmitter and the receiver comprises at least two logical channels, and that one logical channel is used for transmitting delay-critical information, and that the information to be transmitted between the transmitter and the receiver is located in given transmission units and that a method of error protection is employed in the transmission of the transmission units, **characterized** by employing a different method of error protection when transmitting data and delay-critical information.
2. A method as claimed in claim 1, **characterized** in that, in signal transmission, the transmission unit comprising data is channel-coded, the transmission unit is stored in memory, after which the first adaptation of the transmission rate is performed, after which the transmission units comprising data are multiplexed with the transmission units comprising delay-critical information, and for which multiplexed transmission units the second adaptation of the transmission rate and interleaving are performed.
3. A method as claimed in claim 1, **characterized** in that, in signal transmission, the transmission unit comprising delay-critical information is channel-coded, after which the first adaptation of the transmission rate is performed, after which the transmission units comprising delay-critical information are multiplexed with the transmission units comprising data, and for which multiplexed transmission units the second adaptation of the transmission rate and interleaving are performed.
4. A method as claimed in claim 1, **characterized** in that, in signal reception, a deinterleaving and the first adaptation of the transmission rate for the received transmission units are performed, after which the transmission units comprising delay-critical information and the transmission units comprising data are demultiplexed separately.
5. A method as claimed in claim 4, **characterized** by the receiver measuring the quality of the received transmission unit on the channels transmitting other than delay-critical information, and requesting at least one retransmission of the transmission unit on the basis of the quality measurement, until the quality measurement concerning the combined transmission unit composed of the originally transmitted transmission unit and one or more

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retransmitted transmission units indicates that a retransmission is not needed, after which the transmission unit is detected.

5 6. A method as claimed in claim 4, **characterized** by on the channels transmitting other than delay-critical information, in the reception of the signal

checking the quality of each received transmission unit independently of each other (202);

storing the received transmission units (204);

10 transmitting a retransmission request formed on the basis of the quality of the transmission units (206);

forming the combined transmission units (208);

checking the quality of each combined transmission unit (210);

repeating the preceding steps, until the quality of the combined transmission units reaches a predetermined quality level (212);

15 detecting a signal (214).

7. A method as claimed in claim 4 or 5, **characterized** by forming an error check sum, on the basis of which the quality of the unit is checked in the reception.

20 8. A method as claimed in claim 4 or 5, **characterized** by defining the quality of the received transmission unit by forming a bit error ratio of the training sequence of the transmission unit.

9. A method as claimed in claim 4 or 5, **characterized** by determining the quality level of the combined transmission unit by comparing the average quality level of transmission units with the adaptive quality threshold.
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10. A method as claimed in any one of the preceding claims, **characterized** by delay-critical information being control information.

11. A method as claimed in any one of the preceding claims, **characterized** by delay-critical information being speech information.

30 12. A method as claimed in any one of the preceding claims, **characterized** by delay-critical information being circuit-switched information.

13. A radio system comprising a transmitter (112, 114) and a receiver (116) arranged to transmit packet-switched data, and in which the connection (122, 124) between the transmitter and the receiver comprises at least
35 two logical channels, and in which the transmitter and the receiver are ar-

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5 ranged to use one logical channel for transmitting delay-critical information, and that the transmitter and the receiver are arranged to transmit the information as located in given transmission units and to employ the method of error protection in the transmission of the transmission units, **characterized** in that the transmitter and the receiver are arranged to employ a different method of error protection when transmitting data and delay-critical information.

10 14. A system as claimed in claim 13, **characterized** in that the transmitter of the system comprises a channel coder 204 arranged to code a transmission unit comprising data, a memory 206 arranged to store the transmission unit in the memory, the first transmission rate adapter 208, and a multiplexer 210 arranged to multiplex the transmission units comprising data with the transmission units comprising delay-critical information, and the second transmission rate adapter 216 connected functionally to the output of the multiplexer, and an interleaver 218 connected functionally to the output of the adapter.

15 15. A system as claimed in claim 13, **characterized** in that the transmitter of the system comprises a channel coder 212 arranged to code the transmission unit comprising delay-critical information, a transmission rate adapter 214, and the multiplexer 210 arranged to multiplex the transmission units comprising data with the transmission units comprising delay-critical information, and the second transmission rate adapter 216 connected functionally to the output of the multiplexer, and the interleaver 218 connected functionally to the output of the adapter.

20 16. A system as claimed in claim 13, **characterized** in that the receiver of the system comprises a deinterleaver 308, and a demultiplexer 312 arranged to demultiplex the transmission units comprising delay-critical information and the transmission units comprising data divergingly.

25 17. A system as claimed in claim 16, **characterized** in that the receiver of the system comprises a decoder 324 arranged to measure the quality of the transmission unit received on the channels transmitting other than delay-critical information, and a control unit 326 arranged to request at least one retransmission of the transmission unit on the basis of the quality measurement, a memory 322 arranged to store the transmission unit received on the channels transmitting other than delay-critical information, and a com-
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biner 320 arranged to combine the received transmission unit with the re-transmitted transmission unit.

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